



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,114	04/14/2004	Alvin J. Joseph	BUR920030166US1	3113

29154 7590 08/16/2004

FREDERICK W. GIBB, III
MCGINN & GIBB, PLLC
2568-A RIVA ROAD
SUITE 304
ANNAPOLIS, MD 21401

EXAMINER

ABRAHAM, FETSUM

ART UNIT	PAPER NUMBER
----------	--------------

2826

DATE MAILED: 08/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/709,114

Applicant(s)

JOSEPH ET AL.

Examiner

Fetsum Abraham

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) the rest is/are rejected.
- 7) ☒ Claim(s) 26-28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims **4,5,12,13,20,21** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the electrical isolation between said base and collector layers is not visualized in view of the claimed bipolar transistor since the regions are known to be in physical and electrical contact in basic bipolar transistors.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3,6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lanzerotti et al (6,441,462).

The reference discloses a bipolar transistor having a single crystal extrinsic base on a substrate (50) (see abstract) and a patterned isolation regions (54) on the upper surface of the substrate. Although the expression "on" is controversial whether it reflects on the isolation as being attached to the upper substrate surface or not, it would have been obvious to one skilled in the art to

Art Unit: 2826

interpret the expression as implying an isolation over the substrate and relate the primary reference to the claimed invention, since the expression is used to indicate any thing above.

As for claim 3, the secondary reference is provided with a single crystal intrinsic base region attached to the extrinsic base (see abstract).

As for claim 6, epitaxially grown layer forms the extrinsic layer.

As for claim 7, the isolation material is oxide.

Claims 1- 3,6-11,14-19,22-25,29,30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al (6,521,974) in view of Lanzerotti et al (6,441,462).

As for claims 1,17, the primary reference discloses a bipolar transistor having multiple patterned isolation regions (6,8) formed on the substrate (1) in the front page but may have omitted to teach a single crystal extrinsic base region. However, the secondary reference teaches the material for the claimed region in the abstract. Therefore, it would have been obvious to one skilled in the art to use the base material in the secondary reference in the primary structure, since that provides better conductivity than single crystal intrinsic materials.

As for claims 2,10,18,29 a substrate from broader definition is any layer supporting another. In this pretext, the intrinsic base of the primary reference is located between the upper surface of substrate (1) and the upper surface of isolation (6).

As for claims 3,11,19,30 the secondary reference is provided with a single crystal intrinsic base region attached to the extrinsic base (see abstract).

Art Unit: 2826

As for claims 6,14,15,22 the extrinsic layer is formed by epitaxially grown layer.

As for claims 7,8,16,23,24 the isolation material in both patents is oxide and the isolation means is trench oriented.

As for claim 9, there are sub-collector regions (12,18,2) in the bipolar structure of Oda et al and the emitter is adjacent the base region of the same.

As for claim 25, implanting oxygen is a known alternative of forming oxides to wet and dry oxidation.

Claims 26-28 are rejected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

Fetsum Abraham

8/12/04